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Market Development Reports

Evaluation of H5 Avian Influenza Vaccination

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Report Highlights:
The government has completed a one-year vaccination trial program in addition to field vaccinations during the avian influenza outbreak in an attempt to control of the H5N1 virus in Hong Kong. The Government has recently released its findings and the results showed that vaccination is highly effective in protecting chickens against highly pathogenic avian influenza caused by H5N1 virus. While the vaccination program showed encouraging results, the government is still considering a proposal to ban live poultry sales to tackle more completely the avian flu problem.

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Summary

The government has completed a one-year vaccination trial program in addition to field vaccinations during the avian influenza outbreak in an attempt to control of the H5N1 virus in Hong Kong. The Government has recently released its findings and the results showed that vaccination is highly effective in protecting chickens against highly pathogenic avian influenza caused by H5N1 virus. While the vaccination program showed encouraging results, the government is still considering a proposal to ban live poultry sales to tackle more completely the avian flu problem. The proposal has drawn stiff opposition from the industry, who have appealed to legislators for support. Also, the trade has formed a new group, the Joint Committee of Hong Kong Poultry and Livestock and Associated Trades, to fight the move.

Background

Hong Kong had three major outbreaks of bird flu in the past few years. The first bird flu crisis occurred in 1997 resulting in six human deaths. The other two outbreaks happened in May 2001 and February 2002. The three major outbreaks led to the slaughter of over 3 million chickens at a compensation cost of HK$200 million paid to local industry by the government.

Subsequent to the outbreak in February 2002, the government introduced a vaccination program on a trial basis in April 2002 in a farming district called Pak Sha. The vaccine used was Nobilis Influenza H5, a commercially available vaccine containing an inactivated H5N2 virus. A total of 22 farms in the area were included in the trial. The government extended the trial program in December 2002 following a minor bird flu outbreak when 27,000 chickens had to be destroyed. An additional 53 farms were included in the trial as a result.

Vaccination Program & Findings

In the trial program, each chicken was given two doses of the vaccine. All chickens were vaccinated between 8 and 55 days of age. For the 22 farms in the first phase of the trial program, a total of 1.35 million chickens were vaccinated. No clinical outbreaks of disease associated with H5N1 virus were detected on any of these vaccinated farms. About 98% of chickens responded to vaccination after the first dose of vaccine and 80% developed satisfactory antibody levels after two doses of vaccine were received.

For the 53 farms in the second phase of the trial program, a total of 0.75 million chickens received two doses of vaccine and were all tested as of March 31, 2003. Again, no clinical outbreaks of disease associated with H5N1 virus were detected and some 70% of the vaccinated chickens developed satisfactory antibody levels after vaccination.

Apart from testing on vaccinated chickens in field conditions, the government also conducted a laboratory challenge study. Both vaccinated and unvaccinated chickens from the field were challenged in laboratory tests with a H5N1 virus. All vaccinated chickens survived while all unvaccinated chickens died.

In addition, testing results of three infected farms in January 2003 were analyzed to assess the

effectiveness of the H5N2 vaccine used. In these farms, chickens in the affected sheds were culled, whereas those in the adjacent sheds were vaccinated to contain the spread of the virus. For two farms, the vaccine was found to be able to protect chickens and shut down virus excretion by 13-18 days post vaccination. For the remaining farm, no deaths caused by H5 avian influenza were detected in the unaffected vaccinated sheds. The remaining vaccinated chickens in all three farms had satisfactory antibody responses.

In its evaluation report, the government concluded that the H5N2 vaccine used could

a) protect vaccinated chickens against highly pathogenic avian influenza caused by H5N1 virus;
b) produce a very significant reduction (>1000 fold) in excretion of infectious H5N1 virus in vaccinated compared with unvaccinated chickens;
c) produce a protective antibody response in the flock against the H5 avian influenza viruses by field vaccination;
d) protect chickens and shut down the virus excretion by 13-18 days post-vaccination in a field test with H5N1 virus.

Comments

The government concluded that the H5N2 vaccine, when supplemented with biosecurity and surveillance measures, was an effective means to control avian influenza in Hong Kong. Therefore, chickens in all local farms have been vaccinated with this H5N2 vaccine since April 2003 as an additional control measure. Understanding that the program is useless if imports from China are not subject to a similar vaccination program, the government also started discussions with Mainland China about vaccinating live Mainland chickens supplied to Hong Kong with an equivalent vaccine. (Last year, China exported an average of 74,000 chickens to Hong Kong daily, while local supplies totaled to 24,000 chickens.)

Presently, the Hong Kong government has adopted a multi-pronged approach to control further outbreaks of bird flu. In addition to vaccination, the government has tightened and enforced biosecurity measures to prevent the spreading of the virus. Wholesalers and retailers are encouraged to improve the hygiene condition in markets to guard against the breeding of the virus there. All markets are required to have two rest days per month to prevent the virus load from building up. Moreover, the government pledged to enforce a stringent surveillance program in order to have early detection of any virus. The control program using vaccination plus biosecurity measures will be subject to formal review in two years.

The government admits that the risk of H5N1 influenza outbreak remains as long as the live poultry trade exists. In the wake of the recent SARS (severe acute respiratory syndrome) outbreak , the Hong Kong government has formed a Team Clean, headed by a Chief Secretary, to map out measures to improve environmental hygiene in Hong Kong. A Team Clean's report delivered to the Legislative Council for consideration included a proposal to ban live poultry trade as a "means to tackle the root of the Avian Flu problem."

The drastic plan has roused severe opposition from the trade, which has swiftly formed a group

called the Joint Committee of Hong Kong Poultry and Livestock and Associated Trades, to fight against the move to ban live poultry trade. They are afraid that the plan, if implemented, will force them out of business.

In response to the proposal, a research center of the University of Hong Kong will conduct a series of seminars on the bird flu issue. The organizer said the purpose of the seminars was to present the facts and discuss various control measures in a scientific manner. At the first seminar which was just held, a Dutch bird flu expert discussed the effectiveness of vaccination. The seminar was well attended by government representatives and the trade. The seminar, however, was sponsored by a vaccine company.

Proposed central slaughtering of live poultry or a ban on live poultry sales is very controversial. Taking into consideration the deep-rooted eating habit of Hong Kong Chinese and livelihood of all the people in the industry, the government has a long way to go before a complete ban can be implemented.